

ABSTRACT OF THE DISCLOSURE

A recessed rim cold hearth and flanged skull for producing refined metal from raw metal contaminated with high density inclusions and/or hard alpha particles. The hearth has a hollowed body with a rectangular bottom wall and respective upstanding rectangular side and end walls which have imbedded water pipes for cooling water to circulate. An upwardly open chamber is defined within the body which terminates at an upper rim for holding a skull of metal formed on the cooled walls of the hearth. The upper rim of the hearth has an upwardly open, inwardly disposed peripheral recess to form and receive an outwardly extending peripheral flange of solidified metal of the skull. The peripheral flange overlaps and rests on the upper rim in the peripheral recess to support the skull within the hearth and seals against the upper rim such that molten metal disposed in a melt pool formed by overhead electron beam guns (EBM) or plasma torches (PAM) during metal refining is prevented from overflowing into any gap present between the skull and the hearth.